

WHAT IS CLAIMED IS:

1 1. A rotary induction machine comprising:
2 a cylindrical stator;
3 a rotor axially rotatably positioned in the center of said stator;
4 rotor windings integral to said rotor;
5 a three-phase energy winding integral to said stator and magnetically coupled
6 to said rotor windings;
7 a first three-phase auxiliary winding integral to said stator and magnetically
8 coupled to said rotor windings and electrically isolated from said energy winding,
9 said three-phase auxiliary winding comprising three branch windings electrically
10 coupled forming three-phase electrical terminals;
11 a first capacitor electrically coupled across each of said three-phase electrical
12 terminals;
13 a second capacitor coupled with a first branch switch across a portion of a first
14 one of said three branch windings; and
15 a control circuit for gating said first branch switch in response to parameters
16 of a first voltage corresponding to a first selected branch winding and parameters of a
17 voltage and a current corresponding to said energy winding.

1 2. The rotary induction machine of claim 1, wherein a third capacitor is coupled
2 with a second branch switch across a portion of a second one of said three branch
3 windings, said second branch switch gated by said control circuit in response to
4 parameters of a second voltage corresponding to a second selected branch winding
5 and said parameters of said voltage and current corresponding to said energy winding.

1 3. The rotary induction machine of claim 2, wherein a fourth capacitor is
2 coupled with a third branch switch across a portion of a third one of said three branch
3 windings, said third branch switch gated by said control circuit in response to
4 parameters of a third voltage corresponding to a third selected branch winding and
5 said parameters of said voltage and current corresponding to said energy winding.

1 4. The rotary induction machine of claim 3, wherein said second, third and
2 fourth capacitors are not equal.

1 5. The rotary induction machine of claim 1, wherein said first voltage
2 corresponds to the voltage across said second capacitor.

1 6. The rotary induction machine of claim 1, wherein said parameters of said
2 voltage of said energy winding comprise the output voltage amplitude across a phase
3 of said energy winding supplying a load.

1 7. The rotary induction machine of claim 1, wherein said parameters of said
2 current of said energy winding comprise the output current amplitude in a phase of
3 said energy winding supplying a load across a phase said energy winding.

1 8. The rotary induction machine of claim 1, wherein said parameters of said
2 voltage and current of said energy winding comprise the phase relationship of said
3 voltage and said current of said energy winding resulting from a load across said
4 phase of said energy winding.

1 9. The rotary induction machine of claim 5, wherein said parameter of said first
2 voltage corresponds to a measure of the zero crossing time of said first voltage.

1 10. The rotary induction machine of claim 1, where said branch switch is gated on
2 based on a first value of said parameter of said first voltage and gated off based on a
3 second value of said parameter of said first voltage.

1 11. The rotary induction machine of claim 1, wherein said branch switch is an
2 electronic switch operable to conduct alternating current (AC) when gated on.

1 12. The rotary induction machine of claim 1, wherein said induction machine
2 further comprises:

3 a second three-phase auxiliary winding integral to said stator and magnetically
4 coupled to said rotor windings and electrically isolated from said energy winding,
5 said second three-phase auxiliary winding electrically isolated from and magnetically
6 coupled to said first auxiliary winding, said second auxiliary winding comprising
7 three branch windings electrically coupled forming three-phase electrical terminals;

8 a fifth capacitor electrically coupled across each of said three-phase electrical
9 terminals of said second auxiliary winding;

10 a sixth capacitor coupled with a fourth branch switch across a portion of a first
11 one of said three branch windings of said second auxiliary winding; and

12 control signals from said control circuit gating said fourth branch switch in
13 response to parameters of a fourth branch voltage of said second auxiliary winding
14 and said parameters of said voltage and said current of said energy winding.

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- 1 13. A rotary induction machine comprising:
2 a cylindrical stator;
3 a rotor axially and rotatably disposed in the center of said stator;
4 rotor windings integral to said rotor;
5 an energy winding integral to said stator and magnetically coupled to said
6 rotor windings;
7 an auxiliary winding integral to said stator and magnetically coupled to said
8 rotor windings and electrically isolated from said energy winding;
9 an energy storage device coupled with a branch switch across a portion of said
10 auxiliary winding; and
11 a control circuit for gating said branch switch in response to parameters of a
12 voltage corresponding to said auxiliary winding and parameters of a voltage and a
13 current corresponding to said energy winding.

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1 14. A rotary induction machine comprising:
2 a stator and rotor axially disposed in the center of said stator;
3 rotor windings integral to said rotor;
4 a three-phase n energy winding integral to said stator and magnetically
5 coupled to said rotor windings;
6 a three-phase auxiliary winding integral to said stator and magnetically
7 coupled to said rotor windings and electrically isolated from said energy winding,
8 said three-phase auxiliary winding comprising three branch windings electrically
9 coupled forming three-phase electrical terminals;
10 a first capacitance electrically coupled across each of said three-phase
11 electrical terminals;
12 a first switched winding integral to a first phase of said energy winding
13 and coupled with a first branch switch across a portion of said first capacitance
14 corresponding to said first energy phase; and
15 a control circuit for gating said first branch switch in response to
16 parameters of a first voltage corresponding to a first selected branch winding and
17 parameters a voltage and a current corresponding to said energy winding.

1 15. The rotary induction machine of claim 14, wherein a second switched winding
2 integral to a second phase of said energy winding is coupled with a second branch
3 switch across a portion of a second capacitance corresponding to said second energy
4 phase, said second branch switch gated by said control circuit in response to a second
5 voltage corresponding to a second selected branch winding and said voltage and
6 current corresponding to said energy winding.

- 1 16. The rotary induction machine of claim 15, wherein a third switched winding
2 integral to a third phase of said energy winding is coupled with a third branch switch
3 across a portion of a third capacitance corresponding to said third energy phase, said
4 third branch switch gated by said control circuit in response to a third voltage
5 corresponding to a third selected branch winding and said voltage and current
6 corresponding to said energy winding.

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